Austin-Round Rock MSA
Attainment Maintenance Analysis

Early Action Compact Milestone
Technical Report

Prepared by
The Capital Area Planning Council (CAPCO)
On behalf of
The Austin-Round Rock MSA Clean Air Coalition
Austin, Texas, March 2004

TABLE OF CONTENTS

1 Introduction

Section II, E of the Austin-Round Rock MSA Early Action Compact entitled "Maintenance for Growth" lists three options for the area to demonstrate that attainment of the ozone standard will be maintained through 2012. Due to the insufficient time for the development of a 2012 modeling emissions inventory, option c was selected for the analysis. The objective of this document, in accordance with option c, is to identify and quantify federal, state, and/or local measures indicating sufficient reductions to offset growth estimates. Staff has evaluated the anticipated future growth of the region to ensure that the area will remain in attainment of the 8-hour standard for the time period 2007 through 2012 and 2015, as appropriate. This evaluation included analysis of population growth and its effect on on-road mobile emissions and area sources, and new and planned new point sources. Details that support this summary may be found in the referenced appendices.

Descriptions of Federal, State and Local reduction measures are presented in the *Austin/Round Rock Emissions Reduction Strategies* document (March 2004). Local reduction measures are described in detail by the source type affected, the control strategy, implementation plan, estimated emission reduction, and estimated cost.

2 Federal and State Rules

2.1 Introduction

Control strategy projections are estimates of future year emissions that also include the expected impact of modified or additional control regulations. We determined future scheduled regulations, whether at the federal, state, or local level, and applied them to sources in our area. Fuel switching, fuel efficiency improvements, improvements in performance due to economic influences, or any occurrence that alters the emission producing process may also affect future year emissions. These should all be reflected in the projections through the future year control factor, emission factor, or in some cases, by adjusting the activity growth forecast. Control factors and emission factors vary by source category and are continuously being revised and improved based on field and laboratory measurements. In many cases, it will also be necessary to account for multiple programs, which affect the same source category. Therefore, expected controls are calculated for each action and applied appropriately on the stated dates. Other programs are complex and determining appropriate control factors or adjustments to activity forecasts for specific source categories is not straightforward. For example, initiatives to reduce energy use, such as the EPA Green Lights program, are aimed at reducing electricity demand. This, in turn, is tied to reductions in emissions from individual utility boilers. Emission caps or allowance programs set overall constraints on future emission levels, but this must also be translated into reductions at individual units in most cases. For trading programs, a simplified approach may be to constrain emissions at individual units to the level used to calculate the emission budget. More complex approaches would examine how individual units will respond – by controlling emissions or purchasing credits.

2.2 Federal and State Rules

In 1999, the Texas Legislature passed two laws governing emissions for point sources in Texas. The 2007 and 2012 emission inventories account for Senate Bill 7, which limits NOx emissions from grand-fathered electric generating utilities (EGU) in central and eastern Texas and Senate Bill 766, which increases emissions fees on grand-fathered non-electric generating facilities. Tables 4.1-1 and -2 summarize state and federal rules effective through the 2007 – 2012 planning period for the Austin-Round Rock MSA.

The CAAP projects emission reductions from the following federal and state initiatives.

Table 0-1 EPA-ISSUED RULES Estimated NOx			
	Category	Reductions in 2007 (tpd)	
Area Source measures:		VOC	NOx
	Architectural and Industrial Maintenance	1.44	n/a
	Coatings	0.52	n/a
	Auto Body Refinishing		
On-Road measures:			
	Tier 2 Vehicle Emission Standards	5.71	16.79
	National Low Emission Vehicle Program	1.70	3.01
	Heavy-Duty Diesel Engine Rule	0.34	11.78
Non-Road measures:			
	Small Spark-Ignition Handheld Engines		
	Emissions from Compression-Ignition Engines		
	Emissions from Nonroad Large Spark-Ignition	9.27	3.48
	Engines, and Recreational Engines		
	Recreational Marine Standards		
	Locomotives	n/a	2.28
Point Source Measures:			
	ALCOA Consent Decree	n/a	54

Table 2.1-1. Federal emission reduction rules

Sec.	Category	Reductions in 2007 (tpd)	
	Area Source:	VOC	NOx
3.1	Degreasing Units	1.96	n/a
3.2	HB 2914 Grand fathered Pipelines	TBD	TBD
	On-road Source:		
3.3	Stage 1 Vapor Recovery	3.72	n/a
	Non-road Source:		
3.4	Low Emission Diesel	TBD	TBD
	Point Source:		
3.5	SB 7 EGU NOx Reductions	n/a	10.09
3.6	SB 766 Voluntary Emissions Reduction Permit	TBD	TBD
3.7	HB 2912 Grandfathered Requirements	TBD	TBD
3.8	Cement Kiln NOx Limits	n/a	2.16

Table 2.1-2. Summary of TCEQ-Issued Rules for Reduction Strategies

3 Local Measures

Various emission reduction techniques can effectively reduce ozone precursors. Emission reduction methods employed nationally (e.g., automotive emission reductions), statewide and regionally (emission reductions from EGUs) benefit the Austin area, but more reductions are needed to ensure clean air for the region. The EAC provides the mechanism for implementation of local emission reduction techniques to show attainment of the standard. Table 3.1 presents list of the local emission reduction measures.

Emission Reduction Measures (State Regulations)		NOx Reductions (tpd)	VOC Reductions (tpd)
A1	Inspection and Maintenance (I&M)	3.55	4.20
A2	Idling Restrictions on Heavy Diesel	0.67	0.00
A3	Commute Emission Reduction Program	0.27	0.30
A4	Stage I Vapor Recovery Requirement Change	0.00	4.88
A5	Low Emission Gas Cans	0.00	0.89
A6	Degreasing Controls	0.00	5.55
A7	Autobody Refinishing Controls	0.00	0.05
A8	Cutback Asphalt	0.00	1.03
A9	Low Reid Vapor Pressure Gas	0.00	2.87
A10	BACT and Offsets for New or Modified Point Sources	TBD	TBD
A11	Petroleum Dry Cleaning	0.00	1.06
A12	Texas Emission Reduction Program (TERP)	2.00	0.00
A13	Power Plant Reductions	7.08	0.00
	Total (Does not include TBD)	**13.57**	**21.74**

Table 3.1 List of local emissions reduction strategies. Reductions in 2007. Note: The I&M program assumes participation from Hays County. Without Hays Co participation reductions are 3.22tpd and 3.83tpd of NOx and VOC respectively.

The emissions share of the local reduction measures is presented in figures 3.1 and 3.2. Detailed description of each local reduction measure is presented in the *Austin/Round Rock Emissions Reduction Strategies* document (March 2004). In this report the selected measures are described by the source type affected, the control strategy, implementation plan, estimated emission reduction, and estimated cost.

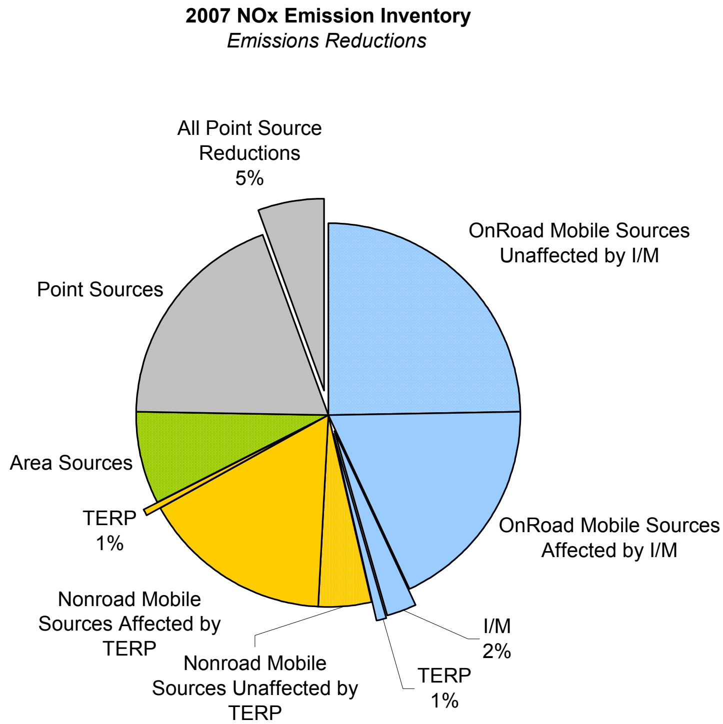

Figure 3.1 Share of the local emission reduction measures to the 2007 NOx Emissions Inventory

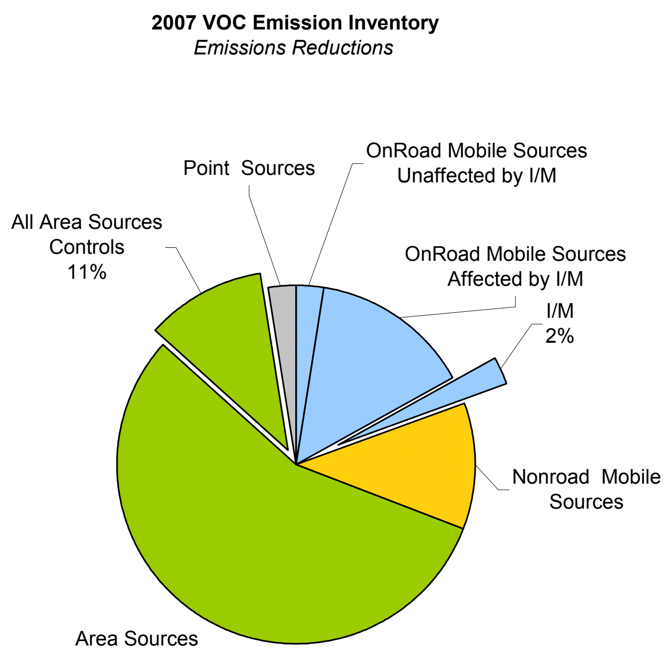

Figure 3.2 Share of the local emission reduction measures to the 2007 VOC Emissions Inventory

4 Photochemical Modeling and Design Value Analysis

This chapter discusses impacts of the federal and local measures on 2007 ozone levels.

Projected 2007 emission inventories were developed for the modeling domain and used with the identical meteorological data and CAMx configuration developed for the Base Case to model the Future Case. Relative reduction factors and future 8-hour ozone design values at Austin's CAMs sites were calculated in accordance with the U.S. EPA's *Draft Guidance on the Use of Models and Other Analyses in Attainment Demonstrations for the 8-Hour Ozone NAAQS* (1999) and the U.S. EPA's *Protocol for Early Action Compacts* (2003). The results indicate that regardless of whether current 8-hour ozone design values are calculated based on the years straddling the latest emission inventory for the area (1998-2000) or the time period of the attainment designation (2001-2003), the attainment test is passed at both Austin monitors during this modeling episode.

4.1 Photochemical Modeling

Figure 4.1-1 presents design values for Austin-Round Rock MSA and emissions trends. Note that EPA regulatory monitoring sites were installed after 1996.

The design values for the years that straddle 1999 were used as the "current" year to estimate the design value for 2007. These design values were the highest measured in the Austin area at both monitors. More recent monitoring provides lower design values and the latest design values for the years straddling 2002 do not exceed the standard. Since the worst-case design values were used in this CAAP, it is important to put these values into perspective.

Analysis of the various metrics related to the meteorological conditions indicates that the conditions favorable to formation of high ozone occurred more often than normal during 1999 and less often than normal in 2001. The selection of the "current" year is based on the date of the most recent emissions inventory. If an emissions inventory were prepared for 2002, then the current year would be 2002, which has a maximum design value of 84 ppb. Note that the 2007 design value is affected by federal and state rules that will reduce regional and local emission in 2007. The effects of local emission reduction measures selected in the EAC CAAP were modeled separately.

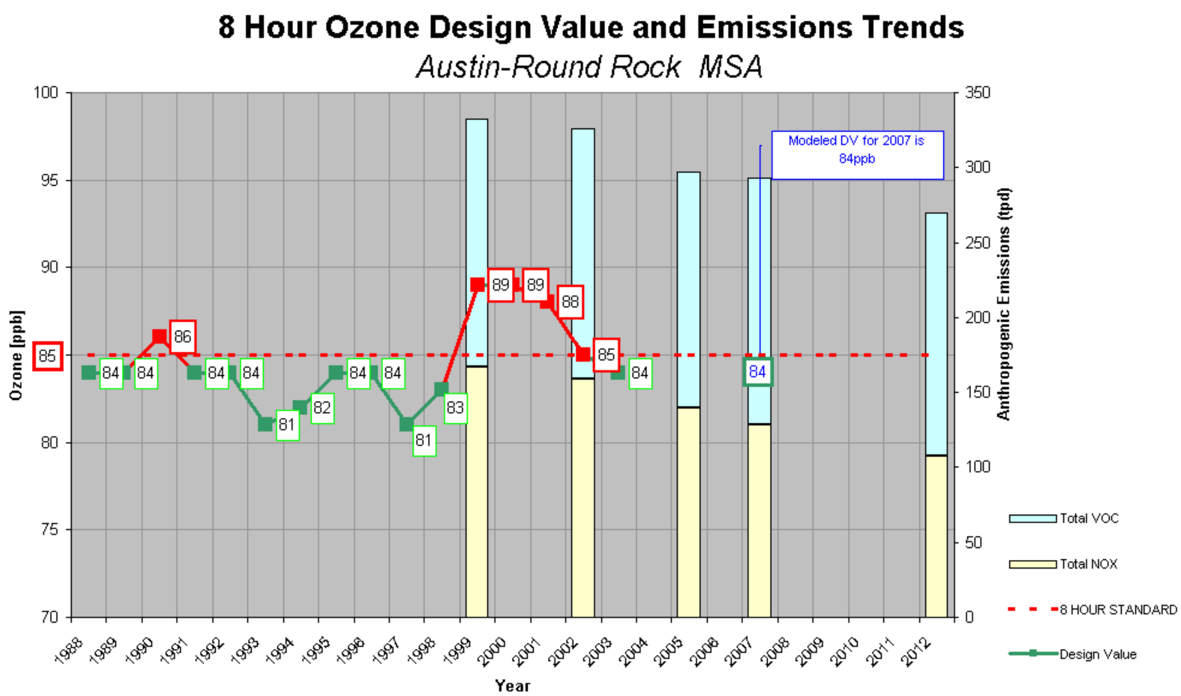

Figure 4.1-1 Austin-Round Rock MSA design value and emissions trends

Future Case modeling used projected 2007 emission inventories with the meteorological data and CAMx configuration developed for the successful Base Case. Inputs followed EPA's *Draft Guidance on the Use of Models and Other Analyses in Attainment Demonstrations for the 8-Hour Ozone NAAQS* (1999) and their *Protocol for Early Action Compacts* (2003). Photochemical modeling is an iterative process. The emissions inventories used in the model are often refined to better predict emissions. The modeling for the future case has been performed with five versions of the 2007 emissions inventory, each with minor modifications or improvements. This modeling provides results that are close to the standard of 85 ppb, but in three cases the design value has been slightly below the standard (84.8 ppb, 84.5 ppb, 84.91 ppb, 84.55 ppb and 84.37 ppb) and in two cases the design value has been slightly above the standard (85.6 ppb and 85.08 ppb). It is likely that the 2007 emissions inventory for the Houston/Galveston area will be modified by TCEQ in the near future, which may affect future case model values. Results of future case modeling are too close to the standard to provide meaningful conclusions about the area's likelihood of demonstrating attainment by 2007 without local emission reduction measures.

Monitor site	1999 design value	Relative reduction factor	Estimated design value for 2007 *	Attainment of the 8-hour standard?
Audubon	89 ppb	0.948	84.37	Yes
Murchison	87 ppb	0.948	82.48	Yes

Table 4.1-2 Model results for base 2007 modeling with the September 1999 Episode

Emission Reduction Measure	NOx Reductions tpd	VOC Reductions tpd
[1]I/M	3.22	3.83
Heavy Duty Vehicle Idling Restrictions	0.67	0.0
Commute Emission Reduction Program	0.27	0.30
Low Emission Gas Cans	0.0	0.89
Stage I Vapor Recovery	0.0	4.88
Degreasing Controls	0.0	5.55
Autobody Refinishing	0.0	0.05
Cut Back Asphalt	0.0	1.03
Low Reid Vapor Pressure Gas	0.0	2.87
TERP	2.0	0.0
Power Plant Reductions	7.08	0.0
TERMs	0.719	0.828

Table 4.1-3 List of Modeled Emission Reduction Measures

[1] Note that NOx and VOC reductions due to the Inspection and Maintenance program are estimated for Travis and Williamson County. The Low Emission Gas Cans measure includes residential and commercial use.

Strategy Model Run	Emission Reduction Measure
1	I/M only (without Hays County)
2	All State Assisted Measures (with TERMs) but without I&M in Hays County and without low Reid Vapor Pressure gasoline
3	TERP only (modeled at 2 tpd reduction)
4	All measures with VOC reductions and no NOx reductions
	Low Emission Gas Cans
	Stage I Vapor Recovery
	Degreasing Controls
	Autobody Refinishing
	Cut Back Asphalt
	Low Reid Vapor Pressure Gas
5	Point Sources Only

Table 4.14 List of Emission Reduction Measures Modeled for Each Strategy.

Control Strategy Run	Monitor site	1999 design value	Relative reduction factor	Estimated design value for 2007 *	Attainment of the 8-hour standard?
1	Audubon	89 ppb	0.944	84.02	Yes
	Murchison	87 ppb	0.944	83.13	Yes
2	Audubon	89 ppb	0.937	83.39	Yes
	Murchison	87 ppb	0.936	81.43	Yes
3	Audubon	89 ppb	0.946	84.19	Yes
	Murchison	87 ppb	0.947	82.39	Yes
4	Audubon	89 ppb	0.946	84.19	Yes
	Murchison	87 ppb	0.945	82.22	Yes
5	Audubon	89 ppb	0.944	84.02	Yes
	Murchison	87 ppb	0.943	82.04	Yes

Table 4.1-5 Model Results for Emission Reduction Measures Applied to Base 2007 EI with the September 1999 Episode

4.2 Trends in Ozone Monitoring Data in Austin

TCEQ (previously the Texas Natural Resource Conservation Commission and prior to that the Texas Air Control Board) has monitored ozone concentrations at two sites in Austin since 1983. The site at Murchison has not moved, but the other site was moved in 1997 to the current site named Audubon. To be consistent, these analyses will be limited to the time period beginning in 1997 when ozone concentrations were measured at both the Murchison and Audubon sites.

Since the EAC addresses 8-hour ozone concentrations, these analyses will be performed for 8-hour time periods. A number of analysis metrics can be used to evaluate trends in ozone concentrations. Among these are the highest concentration, the second highest concentration, the third highest concentration and the fourth highest concentration. At each monitor the annual 8-hour ozone design value is calculated over three consecutive years. It is the average of the fourth highest daily 8-hour ozone concentration measured over each of the three consecutive years. The area-wide design value is the highest of the design values for all of the monitors in the area. The average for the design value is truncated and if that value is greater than or equal to 85 ppb, the standard is exceeded.

Figure 4.2-1 shows the four highest 8-hour ozone concentrations and the design values at the Audubon monitoring site from 1997 to 2003. Figure 4.2-2 shows those same values for the Murchison monitoring site. Figure 4.2-3 shows the design values for Audubon and Murchison and the area design values from 1997 to 2002.
An analysis of historical trends of monitoring in the Austin area indicates that a design value of 89 ppb is the highest ever measured. A simple analysis of potential 8-hour ozone design values in Austin based on historical monitoring data indicated that in 2003 87 ppb is the highest design value likely to be monitored.

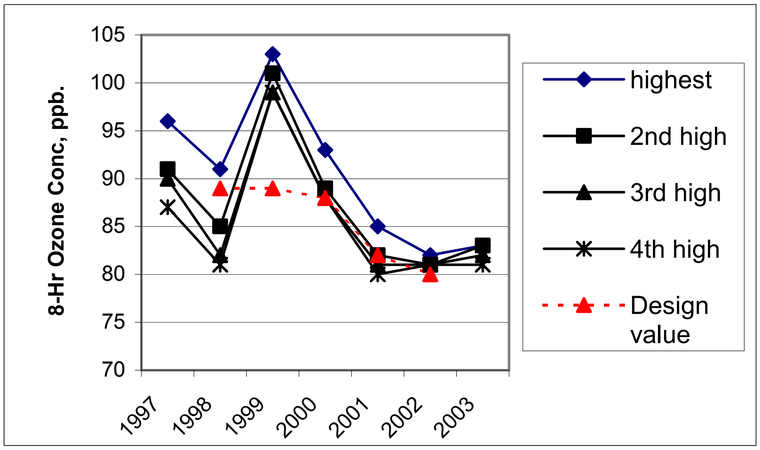

Figure 4.2-1. Four Highest 8-hour Ozone Concentrations and Design Values (ppb) at the Audubon monitoring station for the 1997 through 2003 period.

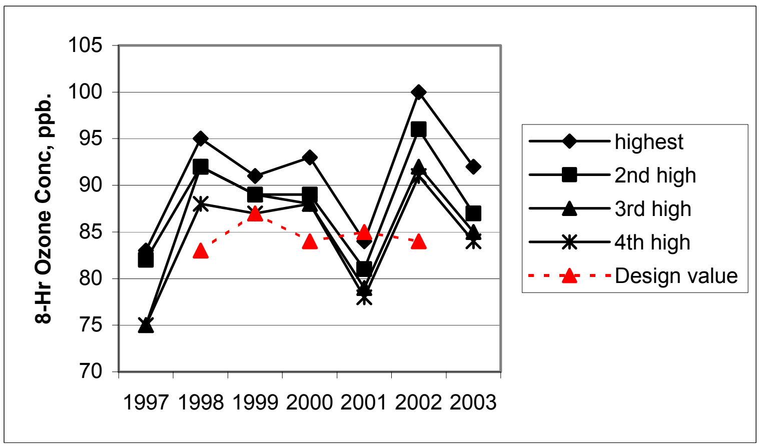

Figure 4.2-2 Four Highest 8-hour Ozone Concentrations and Design Values (ppb) at the Murchison monitoring station for the 1997 through 2003 period.

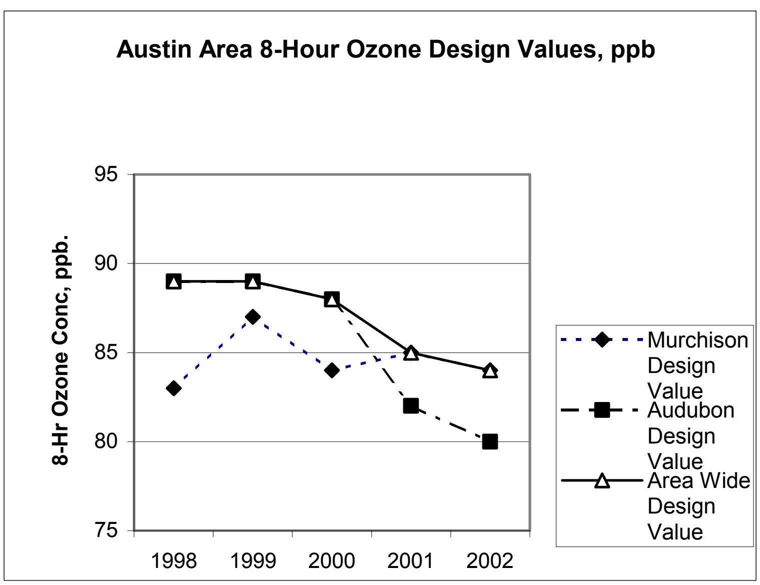

Figure 4.2-3. Design Values for Austin Area

5 Emissions Trends from 2007 to 2012

The goal in developing emission projections is to attempt to account for as many of the important variables that affect future year emissions as possible. They are a function of change in activity (growth or decline) combined with changes in the emission rate or controls applicable to the source. To a large extent, projection inventories are based on forecasts of industrial growth, population growth, changes in land use patterns, and transportation growth. Changes in the emission rate of sources can be influenced by such causes as technological advances, environmental regulations, age or deterioration, how the source is operated, and fuel formulations.

Figures 5.1 and 5.2 display NOx and VOC emissions in 2007 and 2012. Most significant reductions are visible in the onroad mobile category.

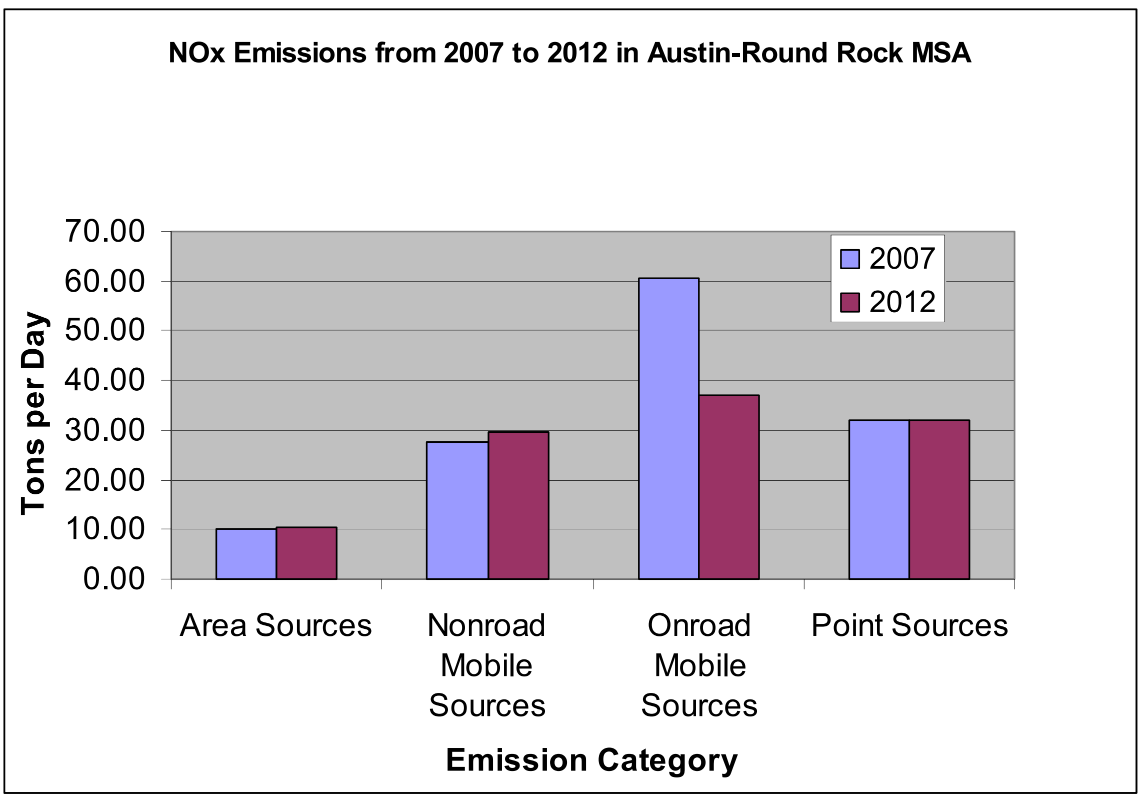

Figure 5.1 Austin-Round Rock MSA NOx Emissions from 2007 to 2012

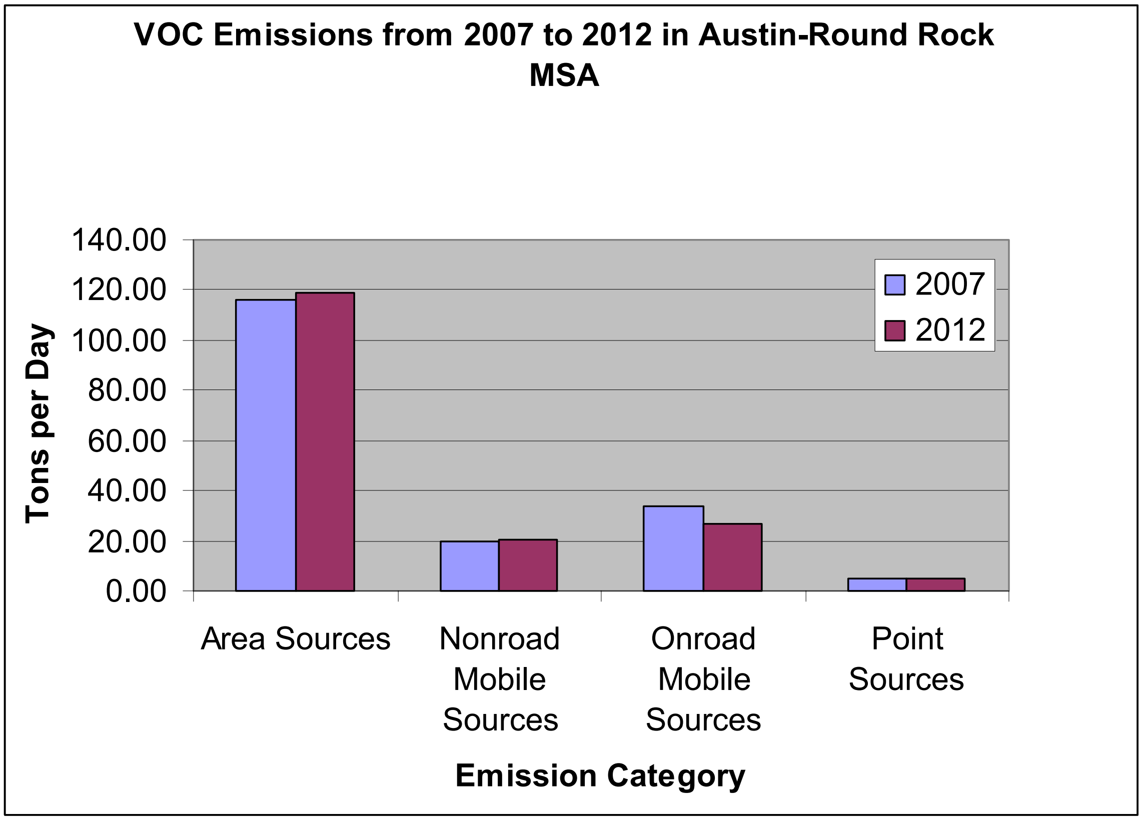

Figure 5.2 Austin-Round Rock MSA VOC Emissions from 2007 to 2012

Note that total anthropogenic emissions in 2012 are smaller by 20.89tpd and 3.89tpd of NOx and VOC respectively from 2007 future year base. These emissions reductions are mainly due to the federal and state rules discussed earlier and due to the cleaner vehicles and new technology that will be available by 2012..

5.1 Area Sources

The emissions associated with area sources are directly related to population and economic activity. These two data sources are typically used to estimate area source emissions.

The population of the region has been growing for the past 60 years and is expected to continue to grow through 2012.

	Population (thousands)				
County	**1999**	**2002**	**2005**	**2007**	**2012**
Bastrop	55.68	62.78	74.41	76.77	96.49
Caldwell	31.49	34.71	37.31	40.09	46.52
Hays	93.62	109.48	128.14	144.51	184.50
Travis	788.50	851.59	931.17	985.47	1095.30
Williamson	236.61	289.85	328.62	358.66	428.30
TOTAL	1205.90	1348.41	1499.66	1605.50	1851.11

Table 5.1-1 Population Growth (CAPCO Regional Forecast 2000 to 2030, REMI, 2003)

As the population increases, so will the economic activity in the region. Though the economy of the region has slowed in recent years, the overall trend from 1999 through 2012 continues to show an increase.

	Employment as Manufacturing Total (thousands)				
County	**1999**	**2002**	**2005**	**2007**	**2012**
Bastrop	0.93	0.96	1.02	1.06	1.12
Caldwell	0.43	0.41	0.43	0.44	0.46
Hays	3.86	3.61	3.89	4.11	4.61
Travis	68.90	65.13	64.39	66.08	68.53
Williamson	9.10	9.09	9.36	9.68	10.11
TOTAL	83.23	79.21	79.10	81.36	84.83

Table 5.1-2 Total manufacturing employment forecast (CAPCO Regional Forecast, REMI, 2003)

With this increase in population and economic growth in the region, emissions from area sources are expected to increase only 14.2% from 1999 to 2012.

Area Sources Emission Trend	1999	2007	2012
BASTROP			
NOx	0.60	0.76	0.82
VOC	4.52	5.53	6.16
CALDWELL			
NOx	0.54	0.67	0.68
VOC	15.29	15.75	17.17
HAYS			
NOx	0.58	0.79	0.85
VOC	5.47	7.67	8.21
TRAVIS			
NOx	3.21	4.05	4.28
VOC	50.60	57.04	57.58
WILLIAMSON			
NOx	3.00	3.84	3.86
VOC	14.68	20.44	21.25
MSA			
NOx	7.93	10.12	10.50
VOC	90.56	106.42	110.37

Table 5.1-3 Area Source Emission Trends Break Down (Tons per Day), CAPCO

For more details, please see the report, *Emissions Inventory Comparison and Trend Analysis for the Austin-Round Rock MSA: 1999, 2002, 2005, 2007, & 2012*, in the Appendices to Chapter 6.

5.2 Non-Road Mobile Sources

Projected MSA non-road mobile emissions for 2002, 2005, 2007 and 2012 were developed using the EPA's NONROAD model and accounted for several federal programs including: Standards for Compression-ignition Vehicles and Equipment, Standards for Spark-ignition Off-road Vehicles and Equipment, Tier III Heavy-duty Diesel Equipment, Locomotive Standards, Recreational Marine Standards, and Lawn and Garden Equipment. The non-road mobile emissions totals were calculated by using the following equation:

$$\frac{\text{Base Case Year Non Road Model Emissions}}{\text{Projection Year Non Road Model Emissions}} = \frac{\text{Base Case Emission Inventory}}{\text{Projection Year Emission Inventory}}$$

Non-Road VOC Emissions					
	1999	2002	2005	2007	2012
Bastrop	0.92	0.54	0.54	0.99	0.57
Caldwell	0.61	0.40	0.44	0.68	0.89
Hays	1.53	1.28	1.23	1.77	1.30
Travis	15.59	16.53	14.15	12.70	13.93
Williamson	3.84	3.93	3.28	3.73	3.39
Total	22.49	22.68	19.63	19.87	20.07

Table 5.2-1 Non-Road Mobile Source NOx Emissions (tons per day), Austin-Round Rock MSA

Non-Road NOx Emissions					
	1999	2002	2005	2007	2012
Bastrop	1.72	1.39	1.68	1.66	1.81
Caldwell	1.42	1.17	1.43	1.39	2.41
Hays	1.88	1.68	1.89	1.84	1.94
Travis	16.69	16.24	17.98	16.21	16.38
Williamson	6.73	6.45	6.90	6.36	7.11
Total	28.44	26.93	29.88	27.46	29.65

Table 5.2-2 Non-Road Mobile Source CO Emissions (tons per day), Austin-Round Rock MSA

The following figures graphically depict the Non-road mobile emission trend.

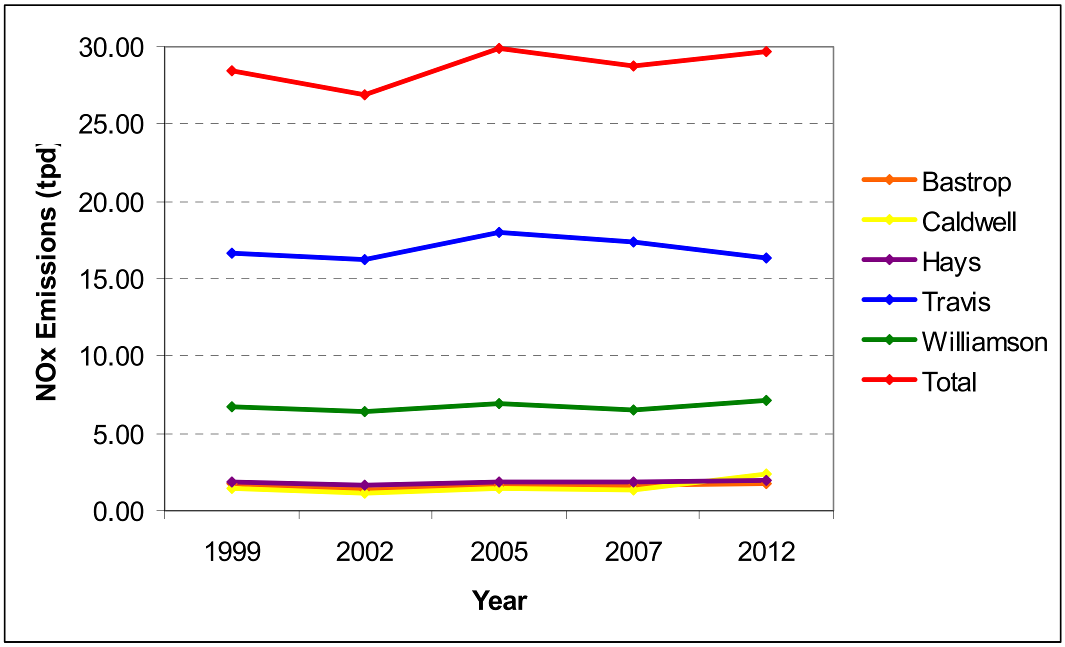

Figure 5.2-1 Non-Road Mobile NOx Emissions, Austin-Round Rock MSA

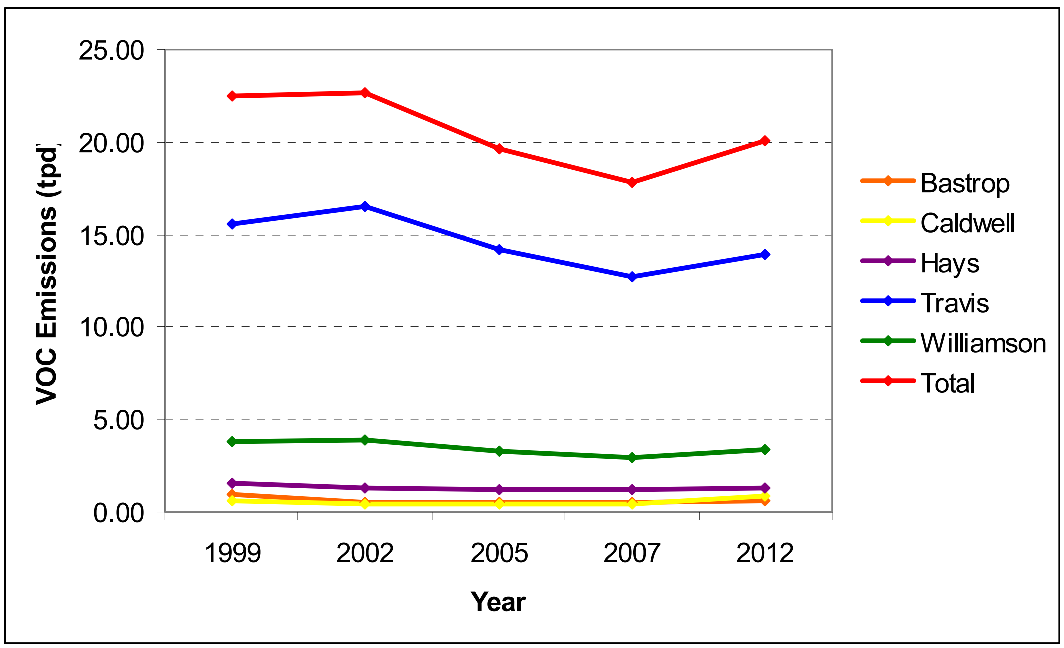

Figure 5.2-2 Non-Road Mobile VOC Emissions, Austin-Round Rock MSA

Emissions were grown using the Nonroad model (version 2002a). Population, and the distribution of population in urban and rural areas, has considerable affect this category. However, the population growth that is expected is offset by new technology and upcoming emission regulation on non-road mobile engines due to state and federal regulations. This accounts for the near straight line effect seen in the NOx trend in Figure 5.2-1. However, for VOC the continued population increases are shown from 2007 to 2012 (Figure 5.2-2).

5.3 On-Road Mobile Sources

VMT Screen: Because on-road mobile emissions account for a significant amount of the region's ozone forming emissions, the region has focused much of its attention on growth in that area. It was, therefore, reasonable to perform a test to determine if the future planned transportation network(s) will contribute increasing or decreasing amounts of NOx and VOC. One test that uses readily available data is a review of the relative change in VMT, also referred to as a VMT "screen". Staff has chosen to use the VMT screen that EPA originally developed for its proposed transitional ozone classification.

The VMT screen tests if any expected increase in VMT in a future year will be offset by technology and control measures. That is, that the expected associated emissions in a future year will not exceed the associated emissions of the base year.

The current CAMPO long-range transportation plan is based on VMT for the years 1997, 2007, 2015 and 2025. TxDOT supplied the1999 VMT. The "VMT Screen" for years 2007 and 2015 of the plan, *Mobility 2025*, gave the following results.

	NOx		**VOC**	
	Three-County		Three-County	
	CAMPO LRP		CAMPO LRP	
Year	No Controls	With I&M	No Controls	With I&M
1999	29,002,000		29,002,000	
2007	19,815,722	18,801,663	20,413,830	17,869,330
2015	9,162,901	7,316,813	15,036,818	11,943,306

Table 5.3-1 Emission Reductions in VMT from 1999 to 2015, with and without I/M

VMT in the three-county region is expected to increase 40% from 1999 to 2007 and 90% from 2007 to 2015. The associated NOx will decrease by so much during those years that it will be as though there were a 31.7% decrease in VMT from 1999 to 2007 and a 68.4% decrease from 1999 to 2015. Additional, though less substantial, decreases will be realized from the region's implementation of an I/M program in Travis, Williamson and Hays Counties in 2005 (35.2% and 74.8%). Also, VOC will be reduced by 29.6% from 1999 until 2007 and 48.2% from 1999 to 2015. Reductions of VOC will also be greater with the I/M program (38.4% and 58.8%). The expected increases in population and the planned expansion of the roadway system will contribute to an increase in VMT, but will not cause on-road emissions to exceed 1999 levels.

Because Bastrop and Caldwell Counties are outside the CAMPO boundaries, and because they will not participate in the I/M program, a separate VMT screen was conducted for the aggregate 5-county region. The results are similar to those realized for the CAMPO area.

	NOx	**VOC**
	Five-County MSA	Five-County MSA
	TTI VMT	TTI VMT
Year	No Control Measures	No Control Measures
1999	32,506,000	32,506,000
2007	27,677,756	22,332,084
2015	9,796,164	15,907,780

Table 5.3-2 Emission Reductions in VMT from 1999 to 2015

VMT is expected to increase in the five-county region by 36% from 1999 to 2007 and 79.3% from 1999 to 2015. Without I/M in the five-county region, NOx from VMT is expected to decline by 33.3% from 1999 to 2007 and 69.9% from 1999 to 2015. The VOC will also decline (31.3% and 51.1%). Again, the expected increases in population and the planned roadway system that will contribute to an increase in VMT will not contribute to emissions exceeding the amount of on-road emissions seen in 1999.

One conclusion from this analysis is that the currently planned roadway system will not exacerbate the production of ozone in the MSA through 2015. The details of all calculations are included in the Appendices to Chapter 6.

Emissions Comparisons: Another way to evaluate VMT and associated emissions is to compare the estimated emissions for future years to the base year emissions. Multiplying the emission factor by the VMT results in an estimate of the daily emissions associated with on-road travel. This evaluation shows a decrease in both NOx and VOC emissions, despite an increase in VMT.

TTI, Five-County, No Controls								
NOx					**VOC**			
Year	**VMT (miles)**	**EF (g/mi)**	**VMT X EF (tons)**		**Year**	**VMT (miles)**	**EF (g/mi)**	**VMT X EF (tons)**
1999	32,506,000	2.433	87		1999	32,506,000	1.425	51
2007	44,508,000	1.185	58		2007	44,508,000	0.715	35
2015	58,274,000	0.409	26		2015	58,274,000	0.389	25

Table 5.3-3 Emission Reductions from 1999 to 2015

Both evaluation techniques, the VMT screen and comparison of emissions, show large enough decreases in on-road emissions to more than offset the anticipated growth in VMT through 2015. These decreases in emissions will be even greater once the I/M program is implemented.

The following tables are the VMT screens. Each title includes the targeted precursor, the area covered, source of VMT, and any additional local control measures included in the emissions factor. For example, "**NOx, 5-county, TTI VMT, No controls**" means that the emission factors are for NOx, the entire 5-county MSA is covered, the VMT is from the TTI report on the September episode, and there were no additional local control measures included in the MOBILE6 input files.

NOx, 3-County, TxDOT & CAMPO VMT, No Controls

NOx

Emission Factors	
1999	2.4490
2007	1.1920
2015	0.4070

		1999 VMT =	29,002,000
	Is the 1999 VMT greater than or equal to the VMT for the future year?	Yes/No	
2007	$VMT_{1999} \geq EF_{2007}/EF_{1999} \times VMT_{2007}$	YES	19,815,722.34
2015	$VMT_{1999} \geq EF_{2015}/EF_{1999} \times VMT_{2015}$	YES	9,162,901.18

2025 Plan VMT	
1999	29,002,000
2007	40,712,000
2015	55,135,000

* HPMS 1999 VMT

VOC, 3-County, TxDOT & CAMPO VMT, No Controls

VOC

Emission Factors	
1999	1.4080
2007	0.7060
2015	0.3840

		1999 VMT =	29,002,000
	Is the 1999 VMT greater than or equal to the VMT for the future year?	Yes/No	
2007	$VMT_{1999} \geq EF_{2007}/EF_{1999} \times VMT_{2007}$	YES	20,413,829.55
2015	$VMT_{1999} \geq EF_{2015}/EF_{1999} \times VMT_{2015}$	YES	15,036,818.18

2025 Plan VMT		
1999	29,002,000	* HPMS 1999 VMT
2007	40,712,000	
2015	55,135,000	

NOx, 3-County, TxDOT & CAMPO VMT, I&M

NOx

Emission Factors	
1999	2.4490
2007	1.1310
2015	0.3250

		1999 VMT =	29,002,000
	Is the 1999 VMT greater than or equal to the VMT for the future year?	Yes/No	
2007	$VMT_{1999} \geq EF_{2007}/EF_{1999} \times VMT_{2007}$	YES	18,801,662.72
2015	$VMT_{1999} \geq EF_{2015}/EF_{1999} \times VMT_{2015}$	YES	7,316,812.98

2025 Plan VMT		
1999	29,002,000	* HPMS 1999 VMT
2007	40,712,000	
2015	55,135,000	

VOC, 3-County, TxDOT & CAMPO VMT, I&M

VOC

Emission Factors	
1999	1.4080
2007	0.6180
2015	0.3050

		1999 VMT =	29,002,000
	Is the 1999 VMT greater than or equal to the VMT for the future year?	Yes/No	
2007	$VMT_{1999} \geq EF_{2007}/EF_{1999} \times VMT_{2007}$	YES	17,869,329.55
2015	$VMT_{1999} \geq EF_{2015}/EF_{1999} \times VMT_{2015}$	YES	11,943,306.11

2025 Plan VMT	
1999	29,002,000 *
2007	40,712,000
2015	55,135,000

* HPMS 1999 VMT

NOx, 5-county, TTI VMT, No controls

NOx

Emission Factors	
1999	2.4330
2007	1.1850
2015	0.4090

VMT Screen

		1999 VMT =	32,506,000
	Is the 1999 VMT greater than or equal to the VMT for the future year?	Yes/No	
2007	$VMT_{1999} \geq EF_{2007}/EF_{1999} \times VMT_{2007}$	YES	21,677,755.86
2015	$VMT_{1999} \geq EF_{2015}/EF_{1999} \times VMT_{2015}$	YES	9,796,163.58

TTI VMT		
1999	32,506,000	* TTI VMT Sept. 20, 1999 episode
2007	44,508,000	
2015	58,274,000	

VOC, 5-County, TTI VMT, No Controls

VOC

Emission Factors	
1999	1.4250
2007	0.7150
2015	0.3890

		1999 VMT =	32,506,000
	Is the 1999 VMT greater than or equal to the VMT for the future year?	Yes/No	
2007	$VMT_{1999} \geq EF_{2007}/EF_{1999} \times VMT_{2007}$	YES	22,332,084.21
2015	$VMT_{1999} \geq EF_{2015}/EF_{1999} \times VMT_{2015}$	YES	15,907,779.65

TTI VMT	
1999	32,506,000 *
2007	44,508,000
2015	58,274,000

* TTI VMT Sept. 20, 1999 episode

5.4 Point Sources

The Texas Commission on Environmental Quality provided emission data for point sources in the CAPCO region for the 1999 EI. In the 1999 EI, the point source was sub-categorized into major point source and minor point source. Point source inventory was developed for 1999 and 2007 for the EAC Clean Air Plan. A uniform change for 2002 and 2005 was assumed and 2012 is expected to stay unchanged based on feedback from power plant stakeholders.

Austin Energy and Lower Colorado River Authority (LCRA) provided emissions for the EGUs they operate in the area. The NEGU (Non-Electric Generating Units) emission totals for the five counties were provided by TCEQ. Table 5.4-1 provides projected total emissions for the areas power plants (EGUs) for 1999 and 2007.

EGU Point Source Emissions (tpd) in the MSA and Surrounding Area					
		1999		**2007**	
County	**Facility Name**	**NOx**	**VOC**	**NOx**	**VOC**
Bastrop	Sam Gideon Electric Power Plant	7.10	0.33	3.94	0.11
Bastrop	Lost Pines 1 Power Plant	n/a	n/a	1.50	0.23
Bastrop	Bastrop Clean Energy Center	n/a	n/a	2.21	0.12
Fayette	Fayette Power Project	60.82	0.55	28.12	0.78
Hays	Hays Energy Facility	n/a	n/a	3.70	0.96
Milam	Sandow Steam Electric	24.20	0.33	13.19	0.32
Travis	Decker Lake Power Plant	8.15	0.44	3.80	0.12
Travis	Holly Street Power Plant	2.88	0.12	2.98	0.01
Travis	Sand Hills	n/a	n/a	1.03	0.20
Travis	Hal C Weaver Power Plant	1.99	0.03	1.86	0.05
Total		105.14	1.80	62.32	2.91
Total MSA		**20.12**	**0.92**	**21.01**	**1.81**

Table 5.4-1 Point Source Emissions from EGU, Austin – Round Rock MSA and Surrounding

Austin Energy's proposed Ten-Year Strategic Plan includes an Energy (generation) Resource Plan. Under this plan, the Holly Power Plant will be retired by Dec. 31, 2007. Cost-effective energy efficiency and load shifting are established as the first response toward meeting new load; and cost-effective renewable energy sources will be increased as practical to reduce generation dependency on fossil fuels, such as natural gas. As part of their resource strategy, Austin Energy has developed an objective to make a strong commitment to renewable energy. The two measures are to achieve a renewable portfolio standard of 20% and an energy efficiency target of 15% by 2020.

1999&2007 NEGU Major Point Source Emissions (tpd) in the MSA and Surrounding Area					
		1999		2007	
County	**Facility Name**	**NOx**	**VOC**	**NOx**	**VOC**
Caldwell	Durol Western Manufacturing, Inc.	0.00	0.01	0.00	0.00
Caldwell	Luling Gas Plant	0.89	0.26	0.29	0.04
Caldwell	Maxwell Facility	0.00	0.15	0.00	0.06
Caldwell	Prairie Lea Compressor Station	2.66	0.04	2.23	0.03
Caldwell	Teppco Crude Oil LLC, Luling Station	0.00	0.01	n/a	n/a
Comal	APG Lime Corp	1.15	0.00	1.15	0.00
Comal	Sunbelt Cemebt of Texas LP	7.61	0.12	3.79	0.13
Comal	TXI Operations LP	3.34	0.14	3.43	0.15
Hays	Parkview Metal Products, Inc.	0.00	0.10	0.00	0.03
Hays	Southern Post Co. Commercial Metal	0.00	0.06	0.00	0.01
Hays	Southwest Solvents and Chemicals	0.00	0.00	0.00	0.00
Hays	Texas LeHigh Cement	7.20	0.18	5.24	0.55
Milam	Aluminum Company of America	54.26	4.25	4.64	0.38
Travis	RIN3M Austin Center	0.15	0.03	0.15	0.03
Travis	Advanced Micro Devices, Inc.	0.00	0.00	0.23	0.17
Travis	Austin White Lime Co.	0.89	0.00	0.94	0.02
Travis	IBM Corporation	0.09	0.04	0.01	0.04
Travis	Lithoprint Co., Inc.	0.00	0.05	n/a	n/a
Travis	Motorola-Ed Bluestein	0.46	0.17	0.01	0.04
Travis	Motorola Integrated Circuit Division	0.09	0.08	0.02	0.02
Travis	Multilayer TEK, L.P.	0.00	0.18	0.01	0.21
Travis	Raytheon Systems, Co.	0.02	0.02	0.01	0.00
Travis	Twomey Welch Aerocorp, Inc.	0.00	0.00	0.00	0.00
Williamson	Aquatic Industries, Inc.	0.00	0.11	0.00	0.04
Total		**78.82**	**6.02**	**22.14**	**1.95**
Total MSA		**12.46**	**1.50**	**9.13**	**1.28**

Table 5.4-2 Point Source Emissions from major NEGU

Table 5.4-2 provides projected NEGU emission totals for 1999 and 2007. The largest emitter from the NEGU Major Point Source category is the Aluminum Company of

America (ALCOA). They have committed to reducing their emissions by 90% by 2007, which will have a substantial impact on the reduction for the entire category.

The total MSA point source VOC emission amounts increase slightly from 1999 to 2012 due to the new permitted EGUs. This occurred due to the development of several new point source related projects in the region. The projected reduction in NOx emission levels is due to the governmental regulations aimed at reducing point source related emission of NOx. Figures 5.4-1 and -2 graphically illustrates the trend for major point source emissions for all counties in the Austin-Round Rock MSA.

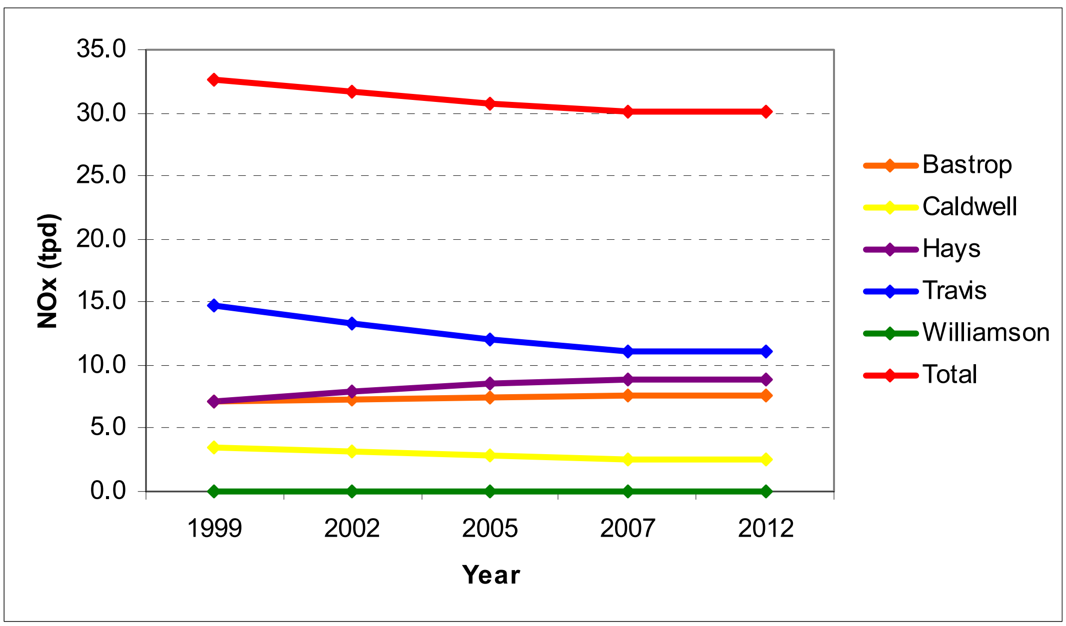

Figure 5.4-1 Point Source NOx Emissions Trend, Austin-Round Rock MSA

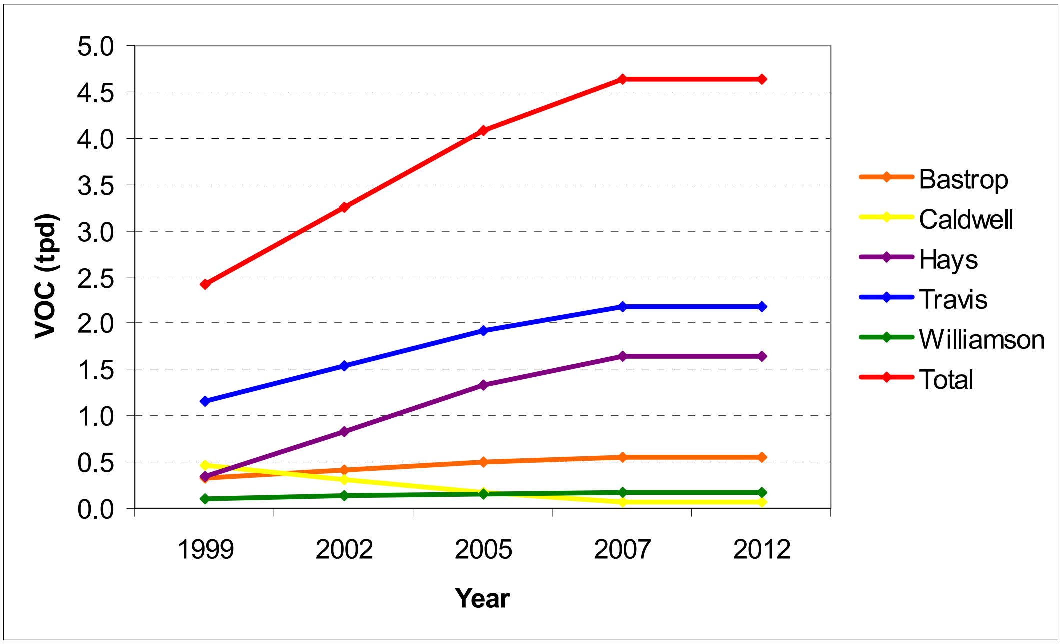

Figure 5.4-2 Point Source VOC Emissions Trend, Austin-Round Rock MSA

Power – Austin Energy and Renewable Sources

Austin Energy's proposed Ten-Year Strategic Plan is the high-level blueprint for their priorities for the next decade. The plan emphasizes reliability, customer service, cost effectiveness, positioning for technology, and greater generation diversity.

Included within the larger plan is an Energy (generation) Resource Plan. Under the energy resource plan, the Holly Power Plant will be retired by Dec. 31, 2007; cost - effective energy efficiency and load shifting are established as the first response toward meeting new load; and cost-effective renewable energy sources will be increased as practical to reduce generation dependency on fossil fuels, such as natural gas. The closing of the Holly Power Plant will reduce NOx emissions by 2.4 TPD in Travis County. As part of their resource strategy, Austin Energy has developed an objective to make a strong commitment to renewable energy. The two measures are to achieve a renewable portfolio standard of 20% and an energy efficiency target of 15% by 2020.

A more detailed description of these rules can be also found in the document "Local Emission Reduction Strategies" and Chapter 5 of the CAAP.

6 The Continuing Planning Process

CAPCO and CAMPO staff will analyze air quality and related data and perform necessary modeling updates annually. In addition to the data sources used for the above analyses, staff may add information from The Central Texas Sustainability Indicators Project (CTSIP). The CTSIP is a nonprofit organization that tracks 40 key indicators (e.g., water pollution, air quality, density of new development) that show the economic, environmental and social health of our MSA. The results of all these analyses will be reported in the June semi-annual reports beginning in June 2005.

Using similar methods as for the above analysis, staff will evaluate:

1. future transportation patterns;
2. all relevant actual new point sources; and
3. impacts from potential new source growth.

Future Transportation Patterns: As part of the *Mobility 2030* plan development process CAMPO staff will perform the VMT screen for years 2007 and 2017. The screen will test to be sure that any expected increase in VMT over the planning horizons will be offset by technology and control measures, that is, that the expected associated emissions will not exceed the associated emissions of the base year (1999).

As part of this analysis, the emission factors will be reviewed and updated as necessary. Review of the emission factors includes checking and updating the fleet mix.

This test will also be performed prior to adoption of any CAMPO long-range transportation plan update or amendment that significantly increases VMT.

New Point Sources and Potential New Point Sources: In addition to the VMT screen and review of area sources, staff will include a list and impact analysis of the relevant new and potential new point sources. Staff will obtain data on these relevant new and potential new point sources from TCEQ.

The annual analysis will determine the adequacy of the selected control measures. After review by the appropriate elected officials, these measures will be adjusted if necessary.